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Development (1948) Department.

Ms SERIES.

G.O. No. 4707

Dated 16-4-48

[Despatch Abstract.]

Agrl. - I.C.A.R. - Scheme for the investigation of rusts of Jowar, Bajra etc. - Forwarded

INDIAN COUNCIL OF AGRICULTURAL RESEARCH.
Keeling Road, New Delhi.
No.45(5)48.A, the 30th March 1948.

From

The Secretary,

To

The Secretary to Government of Madras,
Development Department, Madras.

Sub: Research on rust of Jowar, Bajra etc.,

Sir,

I am directed to say that the Food-Grain Committee at its meeting held in December 1947, considered a suggestion by Dr. K.C.Mehta for undertaking research on rust of Jowar, Bajra, etc. as a long term plan for increasing food production. A copy of the note together with relevant extracts from the proceedings of the Foodgrains Committee is enclosed. The Advisory Board at its meeting held in January 1948 noted these recommendation. I am to forward these recommendations and to enquire whether your Government propose to undertake research as suggested by the Committee.

I have the honour to be,Sir,
Your most obedient servant,
Sd. x x x /Asst.Secretary.

Development Department.

Endorsement No.39627-A4/48-1,dated 8-4-1948.

Referred to the Director of Agriculture for remarks.

Sd. x x
Secy.to Government.

To the Director of Agriculture,
(With copy of pp1l-5 c.f.)

Note considered by the Food Grains Committee at its meeting held in December 1947.

Subject: Investigation on
(i) the rust of Jowar caused by PUCCINIA PURPUREA,
(ii)rust of Bajra caused by PUCCINIA PENNISETI,
(iii) Green ear disease of Bajra caused by SCLEROSPORA
& (iv) Downy mildew of Jowar caused by SCLEROSPORA.

(A note for consideration by the Foodgrains Committee of the Indian Council of Agricultural Research at their meeting to be held on December, 9,&10, 1947).

Preliminary studies of all the four diseases mentioned above have been carried out, under the guidance of the writer by a Senior Student, A Research Assistant and a Lecturer in the Department of Botany Agra College, Agra.

The writer feels that as a part of the long term plan for increase in food production detailed investigations on these diseases should be undertaken under the control of the Foodgrains Committee of the I.C.A.R.

The questions of obtaining funds for the project, establishment of a Central or Provincial stations, if necessary, for detailed investigations leading to control of the diseases specified above and drawing of scheme or schemes along with the technical programme may be referred to a Sub-Committee and their recommendations considered at a subsequent meeting.

Dated November 22,1947. Sd/. K.C.Mehta,Principal,Agra College, Agra & Officer-in-charge,investigation on Cereal Rusts.

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Extracts from the proceedings of the Advisory Board-January'48.

Subject: 89.A.
General recommendations of the Food Grains Committee made at their meeting held in December 1947.

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Investigation on:-

(i) the rust of Jowar caused by PUCCINIA PURPUREA
(ii) Rust of Bajra caused by PUCCINIA PENNISETI
(iii) Green ear disease of bajra caused by SCLEROSPORA
(iv) Downy mildew of Jowar cuased by SCLEROSPORA.

(Suggestions by Rao Bahadur Dr.K.C.Mehata).

Dr. Mehta said that Jowar was an important crop in Bombay and Madras and Bajra in Madras, U.P. and East Punjab and steps should be taken at an early date control these diseases. The Committee recommended that the proposal should be brought to the notice of Provincial Governments concerned who should be asked to undertake investigations on these diseases and if need be approach the I.C.A.R for help.

GOVERNMENT OF MADRAS
Development Department.

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Letter Ms.No.4707, dated 16-9-1948.

To

The Secretary to the Indian Council of Agricultural Research,
New Delhi.

Sir,

Sub: Agriculture - Indian Council of Agricultural Research - Scheme for the investigation of rusts of Jowar, Bajra etc. - Forwarded.

Ref:Your letter No.F.45-(5)/48-A,dt. 30-3-1948.
This Government's letter No.39627-A1/48-8,dt.1-9-48.

I am directed to state that the Government of Madras approve the scheme for the investigation of rusts of Jowar, Bajra etc. prepared by the Director of Agriculture, Madras, an advance copy of which has been forwarded to the Council in this Government's letter cited.

2. The total expenditure of the scheme for the five years is estimated at Rs.1,32,436. It is proposed to share the expenditure equally between the Indian Council of Agricultural Research and the Provincial Government. The share of each will be Rs.66,218.

3. I am to request that the sanction of the Indian Council of Agricultural Research to the Scheme may kindly be obtained and communicated to this Government.

Yours faithfully,
Sd. x x /Secy.to Government.

Copy to the Director of Agriculture,
He is requested to submit the printed copies of the scheme at a very early date for forwarding to the Indian Council of Agricultural Research.

NOTE. .....

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FOR OFFICIAL USE ONLY.

INDIAN COUNCIL OF AGRICULTURAL RESEARCH.
A SCHEME FOR THE INVESTIGATION OF RUSTS OF JOWAR, BAJRA, ETC.

Sorghum(SORGHUM VULGARE), Cumbu (PENNISTUM TYPHOIDES) and tenai (SETARIA ITALICA) are subject to infection by rusts. Sorghum rust (PUCCINIA PURPUREA) is abundant in South India. It is prevelent in South Europe, Southern United States, Japan, Africa and Australia. Thus it has ~~has~~ a wide distribution. CUMBU rust (PUCCINIA PENNISETI) is common in Madras, Bombay, Central Provinces, United Provinces and Bihar. It has also been reported from East Africa. TENAI rust (UROMYCES SETARIAE-ITALICAE) is chiefly found in Peninsular India. It is also known in China, Japan and North Africa.

The view is common that these rusts do not cause much damage as they appear in the later stages of the crop. But contrary to this view heavy losses have been experienced in some years owing to the incidence of the rusts in earlier stages of the crop and their appearance in ~~all~~ epiphytotic form. In 1943 a severe epiphytotic of TENAI rust was experienced in the Ceded Districts which resulted in almost total loss of the ~~crop~~ crop.

THE PRESENT STATE OF OUR KNOWLEDGE.:- The plant pathologist specializing in the study of rusts all the world over have concentrated their attention mainly on the study of the rusts of wheat and barley and consequently a vast volume of information has been gathered on these. Such detailed knowledge of these diseases on the millets is lacking. The course of the infection by the pathogens on their respective hosts is known. But information is lacking about the alternate hosts, if any, collateral hosts, conditions favouring the incidence of heavy infection, methods of survival, etc.

Studies ~~on~~ these rusts are being carried out in the Research Institute at Coimbatore and some information has been gathered on the infection of the hosts, viability of the spores and some of the collateral hosts. But this is only in the initial stages. Field experiments carried out by the Millet Specialist have enabled him to select one or two strains of SETARIA ITALICA which exhibit field resitance to UROMYCES SETARIAE-ITALICAE. But considerable investigations remain to be carried out for obtaining a fuller knowledge of these rusts and to devise methods of control with the ultimate object of increasing food production.

OBJECT OF THE SCHEME:--It is proposed to investigate each of these rusts (enumerated above) in order to ascertain (1) the conditions favouring outbreaks of epiphytotics, (2) method of survival, (3) presence of alternate or collateral hosts, (4) relative resistance of the numerous strains and cultures of the host plants, (5) occurence of physiologic races of pathogen and (6) breeding of resistant strains of host plants if necessary.

VENUE OF THE SCHEME;--The location of the two section Mycology and Millets breeding station at Coimbatore and the ~~xxxxxxxxx~~ occurrence of all the rusts at this place favour the location of the scheme at Coimbatore. Expenditure on laboratory-equipment and buildings can thus be minimized to the bare necessity. The scheme will be under the administrative control of the Government Mycologist and full cooperation in the breeding of strains will be given by the Millets Specialist. Small scale miniature plots will also be raised at other stations whenever found necessary.

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PERIOD.--The scheme is proposed in the first instance for a period of five years from 1st April 1949 to 31st March 1954 but if breeding resistant strains has to be undertaken as a result of these studies it is obvious that further extension will be essential.

TECHNICAL PROGRAMME.

1. COLLECTION OF RUSTS FROM DIFFERENT PARTS OF INDIA. This will be carried out in the earlier stages in order to determine the nature of the rusts, existence of races, etc., by making a survey of different parts of the country where these crops are grown and arranging for collection of the rusts.

2. FIELD observations with the object of correlating incidence of infection and meteorological data.

3. Infection experiments on the various cultures and strains of the crops to note the host parasite relationship.

4. Infection experiments on allied genera and species of host plants to determine the host range, collateral hosts, etc.

5. Studies on the dissemination of spores by the aid of aeroscopes and their relation to incidence of infection in the field.

6. Field experiments to note the relative resistance of the popular and other cultures of the crops.

7. Search for the occurrence of alternate hosts, if any.

8. Utilisation of resistant strains, if any, for hybridization with the object of evolving suitable types for each tract.

STAFF.--The scheme envisages the detailed study of the rust fungi, the host parasite relationship and production of resistant strains. For this purpose a plant pathologist and a breeder are necessary. Therefore it is proposed that the staff for the working of the scheme should consist of one Assistant Mycologist, two Assistants and four fieldmen for pathological investigations and one Assistant Millets Specialist, two assistants and three fieldmen for the field studies of types resistant to the pathogens under infected conditions. Besides for running the official routine correspondence, accounts, etc., one clerk and one typist have been provided. The staff for the pathological investigations will be employed from the commencement of the scheme while the Assistant Millets Specialist and his assistants will be enterained from second year of the scheme by which time preliminary knowledge of the existence of resistant cultures may be available.

FINANCIAL ASPECT.--The statement of expenditure is appended below:--

FINANCIAL STATEMENT.

Particulars.	First year. Rs.	Second year. Rs.	Third year. Rs.	Fourth year. Rs.	Fifth year. Rs.	Total. Rs.
1.	2.	3.	4.	5.	6.	7.
1.PAY OF OFFICERS--						
Asst.Mycologist(1)230--30/2--260--700	2,760	2,760	3,120	3,120	3,600	15,360
Asst.Millet Specialist 230-30/2-260-700	..	2,760	2,760	3,120	3,120	11,760

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1.	2.	3.	4.	5.	6.	7.
2.PAY OF ESTABLISHMENTS--						
Assistants in Mycology(2) 100-5-140-E.B.-10-220	2,400	2,520	2,640	2,760	2,880	13,200
Assts. In Millets(2) 100-4-140-E.B.-10-220	--	2,400	2,520	2,640	2,760	10,320
Fieldmen in Mycology(4) from 1st year onwards 45-2-55-1-60	2,160	2,256	2,352	2,448	2,544	11,760
Fieldmen in Millets(3)from 2nd year onwards 45-2-55-1-60		1,620	1,692	1,764	1,836	6,912
Clerk--Lower Division(1)45-3-60-2-90						
Typist-(1) 45-3-60-2-90	1,080	1,152	1,224	1,296	1,368	6,120
Attender (Mycology)24-1-32-½(A)--35.	288	300	312	324	336	1,560
Peons-(2) in the 1st year,3 from the 2nd year 16--½--25.....	384	588	606	624	642	2,844
Total	9,072	16,356	17,226	18,096	19,086	79,836
2.DEARNESS ALLOWANCE--						
Assistant Mycologist	552	552	624	624	708	3,060
" Millet Specialist	..	552	552	624	624	2,352
" in Mycology(2)	576	624	648	672	696	3,216
" in Millets (2)	..	576	624	648	672	2,520
Fieldmen in Mycology(4)	1,056	1,056	1,056	1,056	1,056	5,280
" Millets(3)	..	792	792	792	792	3,168
Clerk & Typist (2)	528	528	528	528	528	2,640
Attender (1)	228	228	228	228	228	1,140
Peons(3)	432	648	648	648	648	3,024
Total	3,372	5,556	5,700	5,820	5,952	26,400
3.TRAVELLING ALLOWANCE	2,000	2,500	2,500	2,500	2,500	12,000
4.APPARATUS AND MATERIALS	2,000	1,000	500	500	500	4,500
5.OTHER CHARGES--						
Cultivation expenses for 5 acres of land at Rs.200 per acre per year	1,000	1,000	1,000	1,000	1,000	5,000
Labour charges for helping in field observations	500	500	500	500	500	2,500
Contingencies including typewriter,furniture,stamps,etc.	800	500	300	300	300	2,200
Total,other charges	2,300	2,000	1,800	1,800	1,800	9,700
Grand Total						1,32,436

The land required for the field experiments and the facilities of laboratory accommodation will be provided by the Provincial Government. The expenditure will be borne on a 50:50 basis between the Provincial Government and the Indian Council of Agricultural Research.

ABSTRACT FOR FIVE YEARS.

Pay of officers	Rs.27,120	Travelling allowance	Rs.12,000
Dearness allowance	5,412	Apparatus and Materials	4,500
Pay of Establishment	52,716	Other charges	9,700
Dearness allowance	20,988	Grand Total	1,32,436

12th August 1948.

D.Maruda Rajan,
Government Mycologist.

P.Krishna Rao,
Millets Specialist.

Madras: Printed by the Superintendent, Government Press-1948.

p.t.o.

No.F.45(5)/48-A.

INDIAN COUNCIL OF AGRICULTURAL RESEARCH.
'P' Block, Raisina Road,
New Delhi the 14th February 1949.

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From

T.S.Krishnamurti, Esqq,
Under Secretary.

To

The Secretary to the Government of Madras,
Dgvelopment Department, Madras.

Subject: Scheme for research on ~~thm~~ rusts of Jowar and Bajra, Madras.

Sir,

I am directed to invite a reference to the correspondence resting with your letter No.100981 A.II/48-2, dated the 4th October 1948 and to say that the scheme mentioned above was considered by the Advisory Board and the Governing Body of the Council at their meetings held in January 1949. It was decided that the work proposed should be included in the programme of the Coordinated all India Scheme for rust control which was under consideration by the Council. The Scheme has not therefore been recommended for sanction. Further action on this recommendation will be taken when the Coordinated Scheme is sanctioned by the Government of India. A

Yours faithfully,
Sd.T.S.Krishnamurty,
Under Secretary.

Development Department.

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Endorsement No.13718-A4/49-1,dated 24-2-1949.

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Communicated to the Director of Agriculture with reference to his letter No.L-1-1119/48,dated 18-8-1948.

Sd. x x/Secy.to Government.

To the Director of Agriculture.

NOTE:- After issue of the Endorsement, this may be added to the previous papers at (N) with a CB entry against 1-5-49 to watch the action proposed at 'A' above.

Sd. x x /23-2-49.

/True copy/ R. Thiagarajan 27-1-54

Office Assistant,
Madras Record Office.

PSR. 8-1-54. 27/1/54 27.1